

Simulating FAB Business Improvement at BAE Systems



BMW

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Bayerische Motoren Werke AG, commonly known as BMW or BMW AG, is a German automobile, motorcycle and engine manufacturing company founded in 1916. BMW is headquartered in Munich, Bavaria. It also owns and produces Mini cars, and is the parent company of Rolls-Royce Motor Cars. BMW produces motorcycles under BMW Motorrad. In 2012, the BMW Group produced 1,845,186 automobiles and 117,109 motorcycles across all of its brands. BMW is part of the "German Big 3" luxury automakers, along with Audi and Mercedes-Benz, which are the three best-selling luxury automakers in the world.

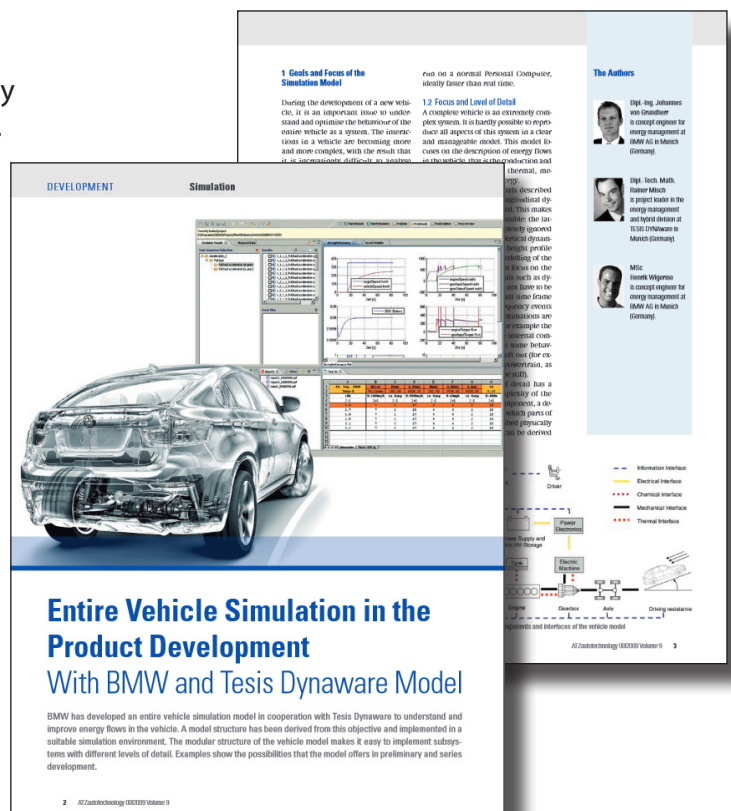
BMW has developed an entire vehicle simulation model to understand and improve energy flows in the vehicle. A model structure has been derived from this objective and implemented in a suitable simulation environment. The modular structure of the vehicle model makes it easy to implement subsystems with different levels of detail. Vehicle simulation enables energy analysis to be performed in all development phases. It allows complex problems and interactions in the vehicle to be understood, analysed and solved. In this way, the energy flows can be optimised and the fuel consumption can be lowered. Thus, vehicle simulation is an important tool in the product development.

Simulation and Forecasting Technology role

Entire vehicle simulation modelling, improve energy flows in the vehicle, support product development.

Sector
Automotive

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1 Goals and Focus of the Simulation Model

During the development of a new vehicle, it is an important issue to understand and optimise the behaviour of the entire vehicle as a system. The interactions in a vehicle are becoming more and more complex, with the result that it is increasingly difficult to analyse, run on a normal Personal Computer, significantly faster than real time.

1.2 Focus and Level of Detail

A complex vehicle is an extremely complex system. It is hardly possible to reproduce all aspects of this system as a clear and manageable model. This model focuses on the description of energy flows in the vehicle, the energy conversion and thermal, mechanical, electrical, and chemical processes described by mathematical models. This makes possible the description of energy flows in the vehicle as a system, which can be analysed and simulated in a suitable simulation environment.

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Entire Vehicle Simulation in the Product Development With BMW and Tesis Dynaware Model

BMW has developed an entire vehicle simulation model in cooperation with Tesis Dynaware to understand and improve energy flows in the vehicle. A model structure has been derived from this objective and implemented in a suitable simulation environment. The modular structure of the vehicle model makes it easy to implement subsystems with different levels of detail. Examples show the possibilities that the model offers in preliminary and series development.

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